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Estimation of FCC-ee beam lifetime from full lattice tracking

Monday 2 June 2025 16:00 (2 hours)

Across its energy range, the beam lifetime at the Future Circular Collider e^+e^- (FCC-ee) will be dominated by radiative processes occurring as a result of the beam-beam collision, namely by beamstrahlung and small angle radiative Bhabha scattering. Although approximate analytical expressions exist for estimating the lifetime, it is most accurately evaluated by performing multiparticle tracking simulations, due to the interplay of magnetic errors with non-linear forces due to the beam-beam interaction. This contribution presents the first comprehensive study of the FCC-ee beam lifetime including both effects, simulated with the Xsuite framework.

Footnotes

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Europe

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